# UNITED STATES PATENT AND TRADEMARK OFFICE

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/495,207 | 01/31/2000 | Robert E. Robotham | 1400.4100242 | 4551 |

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| EXAMINER |
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| PHILPOTT, JUSTIN M |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2665 | 8 |

DATE MAILED: 04/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

| | Application No. | | icant(s) | |
|---|---|---|---|---|
| **Office Action Summary** | 09/495,207 | | ROBOTHAM, ROBERT E. | |
| | **Examiner** | | **Art Unit** | |
| | Justin M Philpott | | 2665 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *12 January 2004*.

2a)☒ This action is **FINAL**.      2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-24* is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 January 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☐ All   b)☐ Some * c)☐ None of:

       1.☐ Certified copies of the priority documents have been received.

       2.☐ Certified copies of the priority documents have been received in Application No. _____.

       3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

## DETAILED ACTION

### *Response to Arguments*

1.      Applicant's arguments filed January 12, 2004 have been fully considered but they are not

persuasive.

2.      Regarding claims 1, 10 and 17, first, applicant argues (page 12, fifth paragraph continued

to page 13) that Soirinsuo does not teach generating a cell stream as recited in applicant's claims.

However, as discussed in the previous office action, and repeated herein, via VPI/VCI

Translation 934 in FIG. 9 (see also related text, col. 9, lines 33-51), Soirinsuo teaches generating

a cell stream for the merged virtual connection based on the prioritization information and virtual

connection identities, wherein the merged virtual connection is identified by a merged virtual

connection identifier, wherein each cell in the cell stream includes the merged virtual connection

identifier.  Specifically, Soirinsuo teaches the cell stream for the merged virtual connection (e.g.,

cell stream on VCC connection 960) is generated based on the prioritization information (e.g.,

service classes; see col. 7, lines 37-50; payload type PT, see col. 9, lines 7-32; and with respect

to scheduler, see col. 10, lines 22-42 regarding weighted scheduling and priorities) and virtual

connection identifiers stored in the queue (e.g., see col. 10, lines 10-21 regarding queuing the

identity of a virtual connection when cells that constitute a complete packet are received).

Further, Soirinsuo specifically teaches the merged virtual connection (e.g., cell stream on VCC

connection 960) is identified by a merged virtual connection identifier (e.g., VCC of connection

960, see also col. 9, lines 41-46 regarding combining/merging to a single VCC) wherein each

cell in the cell stream then includes the merged virtual connection identifier (e.g., each cell in the

cell stream on connection 960 comprises the VCC of connection 960, see col. 9, lines 41-46).

Thus, applicant's argument that Soirinsuo does not teach generating a cell stream as recited in

applicant's claims is not persuasive.

Second, applicant argues (page 13, first paragraph) that Examiner has not provided

evidence of the "other methods" recited by Soirinsuo (col. 10, lines 18-21) as to how they would

relate to queuing recited in applicant's claims. However, the mentioning of "other methods" by

Soirinsuo is a clear invitation to consider other methods used in related art. Accordingly, Benson

is introduced to teach such "other methods", wherein Benson specifically discloses the queuing

recited in applicant's claims. That is, like Soirinsuo, Benson also teaches a method for receiving

cells, and further, specifically teaches queuing an identifier in a queue (e.g., in the form of

complete pointer 128) when cells that constitute a complete queue are buffered in a

corresponding cell buffer (e.g., complete queue 124, see col. 4, line 40 – col. 6, line 50 with

reference to FIG. 2). As further evidence that the teachings of Benson are directed towards art

related to Soirinsuo, like Soirinsuo, Benson also teaches that it is well known in the art to also

identify when cells that constitute a complete packet are buffered (e.g., see col. 2, lines 58-67),

when suitable memory is available. Thus, at the time of the invention one of ordinary skill in the

art would be motivated to apply the teachings of Benson to the art of Soirinsuo as encouraged by

Soirinsuo in the form of "other methods". Still further, the teachings of Benson provide

improvements in ATM communication such as reduced memory requirements and lower latency

(e.g., see col. 2, lines 66-67). Thus, at the time of the invention it would have been obvious to

one of ordinary skill in the art to apply the teachings of Benson to the method of Soirinsuo in

order to reduce memory requirements and reduce latency in ATM communications.

Accordingly, applicant's argument that the cited art fails to disclose the queuing recited in applicant's claims is not persuasive.

3.        Regarding claims 2, 14 and 18, applicant argues (page 13, second paragraph) that the cited portion of Soirinsuo does not teach the elements of applicant's claims. However, as discussed in the previous office action, and repeated herein, Soirinsuo teaches dequeuing cells from the plurality of buffers to produce the cell stream, wherein dequeuing of the cells is based on the prioritization information (e.g., see col. 9, line 33 – col. 10, line 65). More specifically, Soirinsuo teaches receiving cells for buffering (e.g., see col. 9, lines 52-55) and dequeuing the cells from the buffers (e.g., see col. 9, lines 56-62 regarding the transmission of the buffered cells) to produce the cell stream (e.g., on VCC connection 960). Thus, applicant's argument is not persuasive.

4.        Regarding claims 3, 11, 13 and 19, applicant argues (page 13, third paragraph) that Soirinsuo in view of Benson fails to disclose the queuing the identity of the virtual connection into a corresponding one of the plurality of queues based on class of the virtual connection. However, as discussed in the previous office action, Benson clearly teaches the queuing arrangement, and also as discussed in the previous office action, Soirinsuo clearly teaches operation is performed based on class of the virtual connection (e.g., see service classes in col. 7, lines 37-50; payload type PT in col. 9, lines 7-32; and with respect to scheduler, see col. 10, lines 22-42 regarding weighted scheduling and priorities). As discussed, the teachings of Benson provide improvements in ATM communication such as reduced memory requirements and lower latency (e.g., see col. 2, lines 66-67). Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the teachings of Benson to the method of

Soirinsuo in order to reduce memory requirements and reduce latency in ATM communications.

Accordingly, applicant's argument is not persuasive.

5.      Regarding claims 4, 12 and 20, applicant argues (page 14, first paragraph) that Bensen

does not teach the entire language of applicant's claims. However, as discussed in the previous

office action, and repeated herein, with respect to claims 4, 12 and 20, Benson teaches the

method of claim 3 as discussed and further teaches the plurality of queues is a linked list

configuration (e.g., see col. 5, lines 5-15 and FIG. 2 regarding pointer 128). Further, it is implicit

that by teaching the queues are a linked list configuration, the identities are appended to tails or

headers of the lists as is known in the art of linked lists. Thus, Benson clearly anticipates the

language of applicant's claims. Accordingly, applicant's argument is not persuasive.

6.      Regarding claims 5, 7, 8, 21, 23 and 24, applicant argues (page 14, second paragraph; and

page 15, first and second paragraphs) these claims should be allowed because they depend upon

claim 1. However, as discussed above, Soirinsuo in view of Benson teach claim 1. Thus, this

argument is not persuasive.

7.      Regarding claims 6 and 22, applicant argues (page 14, third paragraph) that Soirinsuo

does not disclose referencing a prioritization table that stores an accessing sequence for the

queues as recited in applicant's claims. However, as discussed in the previous office action, and

repeated herein, Soirinsuo teaches prioritization information further comprises referencing a

prioritization table (e.g., scheduler supporting priorities, see col. 10, lines 22-42) that stores an

accessing sequence (e.g., buffer state list or weighted scheduling) for the plurality of queues.

Thus, applicant's argument is not persuasive. Applicant further argues that Soirinsuo fails to

further explain how such functions are to be implemented. However, applicant's claims do not

recite any additional implementation explanation within the claims that is not taught by

Soirinsuo. Thus, applicant's additional argument is moot.

8.      Regarding claim 9, applicant argues (page 15, third paragraph) that Soirinsuo does not

disclose the limitations recited in the claim. However, as discussed in the previous office action

and repeated herein, Soirinsuo teaches generating a cell stream by combining the cell stream of a

first virtual connection (e.g., $VCC_1$) with a cell stream of at least a second virtual connection

(e.g., $VCC_2$), wherein the virtual connection identifier corresponding to the second virtual

connection is different than the first virtual connection identifier. Further, while Soirinsuo may

not specifically disclose that, e.g., a first virtual connection (e.g., $VCC_1$) comprises a merged

virtual connection and that the merged virtual connection is further merged with a second virtual

connection, Soirinsuo teaches the method of providing a merged virtual connection (e.g., 450

$VCC_{1-n}$) comprising a plurality of virtual connections. At the time of the invention it would have

been obvious to one of ordinary skill in the art to utilize a first virtual connection (e.g., $VCC_1$)

comprising a merged virtual connection such as the merged virtual connection taught by

Soirinsuo (e.g., 450 $VCC_{1-n}$) in order to accommodate additional virtual connections. Moreover,

it is generally considered to be within the ordinary skill in the art to duplicate parts for a

multiplied effect. St. Regis Paper Co. v. Bemis Co., Inc., 193 USPQ 8, 11 (7th Cir. 1977). Thus,

at the time of the invention it would have been obvious to one of ordinary skill in the art to

include an additional stage of merging virtual connections in Soirinsuo in order to accommodate

additional virtual connections for a multiplied effect.

9.      Regarding claims 15 and 16, applicant argues (page 15, fourth paragraph) that Soirinsuo

does not anticipate including the system in an ingress or egress portion of a communications

switch. However, as discussed in the previous office action, and repeated herein, Soirinsuo

teaches the virtual connection merging system is included in a portion of a communication

switch (e.g., see col. 10, lines 35-42). This "portion" implicitly is either an ingress or egress

portion. While Soirinsuo may not specifically disclose which portion of the switch the system is

included in, Soirinsuo does *not* disclose the location of the virtual connection merging system is

limited to specifically either the ingress portion or egress portion of the communication switch.

That is, the teachings of Soirinsuo are clearly applicable for ingress and/or egress portions of a

communication switch since Soirinsuo does not limit application to only one of ingress or egress

portions, and since the portion of the communication switch of Soirinsuo implicitly is either an

ingress or egress portion. Thus, at the time of the invention it would have been obvious to one of

ordinary skill in the art to locate the system of Soirinsuo in the ingress or egress portion of the

communication switch since Soirinsuo does not limit application to only one of ingress or egress

portions, and since the portion of the communication switch of Soirinsuo implicitly is either an

ingress or egress portion.

### *Claim Rejections - 35 USC § 103*

10.     The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

11.     Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent

No. 6,148,001 to Soirinsuo et al. in view of U.S. Patent No. 6,026,090 to Benson et al.

Regarding claims 1, 10 and 17, Soirinsuo teaches a method for merging a plurality of

virtual connections (e.g., $VCC_1$-$VCC_n$ in FIG. 4) to form a merged virtual connection (e.g., 450),

comprising: buffering cells of each of the plurality of virtual connections into a corresponding

one of a plurality of cell buffers (e.g., see col. 10, lines 58-60), wherein each of the plurality of

virtual connections is identified by a virtual connection identifier (e.g., VCI 712 in FIG. 7);

queuing the identity of a virtual connection when cells that constitute a complete packet are

buffered in a cell buffer (e.g., via switch controller comprising state machine 1130, see col. 10,

lines 16-18); obtaining prioritization information for the merged virtual connection (e.g., service

classes, see col. 7, lines 37-50; and payload type PT, see col. 9, lines 7-32); and generating a cell

stream for the merged virtual connection based on the prioritization information and virtual

connection identities, wherein the merged virtual connection is identified by a merged virtual

connection identifier (e.g., see VPI/VCI Translation 934 in FIG. 9), wherein each cell in the cell

stream includes the merged virtual connection identifier. While Soirinsuo may not specifically

disclose queuing the identity (e.g., VCI) in a specific queue configuration, Soirinsuo teaches the

step of scheduling virtual connections in accordance with the completion of buffered packets

(e.g., see col. 9, lines 15-16) via a switch controller (e.g., see col. 10, lines 16-29). Furthermore,

Soirinsuo discloses that those skilled in the art will recognize that other methods of obtaining the

state of the received cells may be used without departing from the scope of the invention (col.

10, lines 18-21). Benson also teaches a method for receiving cells, and further, specifically

teaches queuing an identifier in a queue (e.g., in the form of complete pointer 128) when cells

that constitute a complete queue are buffered in a corresponding cell buffer (e.g., complete queue

124, see col. 4, line 40 – col. 6, line 50 with reference to FIG. 2). Benson further teaches that it

is well known in the art to also identify when cells that constitute a complete packet are buffered

(e.g., see col. 2, lines 58-67), when suitable memory is available. The teachings of Benson

provide improvements in ATM communication such as reduced memory requirements and lower

latency (e.g., see col. 2, lines 66-67). Thus, at the time of the invention it would have been

obvious to one of ordinary skill in the art to apply the teachings of Benson to the method of

Soirinsuo in order to reduce memory requirements and reduce latency in ATM communications.

Regarding claims 2, 14 and 18, Soirinsuo teaches dequeuing cells from the plurality of

buffers to produce the cell stream, wherein dequeuing of the cells is based on the prioritization

information (e.g., see col. 9, line 33 – col. 10, line 65).

Regarding claims 3, 11, 13 and 19, Soirinsuo teaches each virtual connection comprises

prioritization information which includes class prioritization information (e.g., service classes,

see col. 7, lines 37-50; and payload type PT, see col. 9, lines 7-32).

Regarding claims 4, 12 and 20, as discussed above regarding claims 1, 10 and 17, Benson

teaches the plurality of queues is a linked list configuration (e.g., see col. 5, lines 5-15 and FIG. 2

regarding pointer 128).

Regarding claims 5 and 21, Soirinsuo teaches the prioritization information allocates

available bandwidth on the merged virtual connection based on class by teaching the

prioritization information comprises service classes in accordance with various bit rate type

requirements (e.g., CBR, VBR, see col. 7, lines 37-50).

Regarding claims 6 and 22, Soirinsuo teaches prioritization information further comprises

referencing a prioritization table (e.g., scheduler supporting priorities, see col. 10, lines 22-42)

that stores an accessing sequence (e.g., buffer state list or weighted scheduling) for the plurality of queues.

Regarding claims 7 and 23, Soirinsuo teaches generating the cell stream such that cells corresponding to different packets that are combined to produce the merged virtual connection are not intermingled (e.g., see col. 10, lines 29-35).

Regarding claims 8 and 24, Soirinsuo teaches detecting an end of message indication that indicated a final cell for the complete packet (e.g., see col. 9, lines 7-8).

Regarding claim 9, as discussed above regarding claim 1, Soirinsuo teaches generating a cell stream by combining the cell stream of a first virtual connection (e.g., $VCC_1$) with a cell stream of at least a second virtual connection (e.g., $VCC_2$), wherein the virtual connection identifier corresponding to the second virtual connection is different than the first virtual connection identifier. While Soirinsuo may not specifically disclose that, e.g., a first virtual connection (e.g., $VCC_1$) comprises a merged virtual connection and that the merged virtual connection is further merged with a second virtual connection, Soirinsuo teaches the method of providing a merged virtual connection (e.g., 450 $VCC_{1-n}$) comprising a plurality of virtual connections. At the time of the invention it would have been obvious to one of ordinary skill in the art to utilize a first virtual connection (e.g., $VCC_1$) comprising a merged virtual connection such as the merged virtual connection taught by Soirinsuo (e.g., 450 $VCC_{1-n}$) in order to accommodate additional virtual connections.

Regarding claims 15 and 16, Soirinsuo teaches the virtual connection merging system is included in a portion of a communication switch (e.g., see col. 10, lines 35-42). While Soirinsuo may not specifically disclose the location of the virtual connection merging system is limited to

specifically either the ingress portion or egress portion of the communication switch, it is well known in the art for such a system to be located in the ingress or egress portion of a communication switch. That is, the teachings of Soirinsuo are clearly applicable for ingress and/or egress portions of a communication switch. Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to locate the system of Soirinsuo in the ingress or egress portion of the communication switch as is well known in the art.

### *Conclusion*

12.    **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.
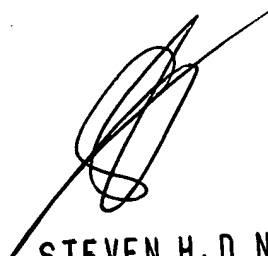
13.    Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin M Philpott whose telephone number is 703.305.7357. The examiner can normally be reached on M-F, 9:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Huy D Vu can be reached on 703.308.6602. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Justin M Philpott

STEVEN H. D NGUYEN
PRIMARY EXAMINER